CLAIMS

What is claimed is:

1. A method for determining a rotor position of a synchronous motor, comprising the steps of:

   applying to a synchronous motor a plurality of current vectors having different directions;

   determining absolute values of required ones of the current vectors to obtain a defined excursion of the rotor;

   determining inverse values of the determined absolute values of the current vectors;

   digitally filtering using several of the inverse values to determine Fourier coefficients of a first harmonic of the determined inverse values; and

   computing with the determined Fourier coefficients the rotor position of the synchronous motor.

2. The method of claim 1, wherein an opposite mathematical sign is applied to the determined inverse values in a range of a negative excursion of the rotor before determining the Fourier coefficients.

3. The method of claim 2, wherein the Fourier coefficients of the first harmonic of the determined inverse values are determined by digitally filtering using all inverse values.

4. The method of claim 2, wherein the Fourier coefficients of the first harmonic of the inverse values are determined by digitally filtering only the inverse values that are in the range of the negative excursion of the rotor.

5. The method of claim 1, wherein the Fourier coefficients of the first harmonic of the inverse values are determined by digitally filtering using several inverse values only in a range of a positive excursion of the rotor.

6. The method of claim 1, and further comprising the step of applying a brake to hold the rotor before applying the plurality of current vectors.

7. A data carrier having a computer program stored thereon for carrying out the method of claim 1.

8. A computer with a program memory having stored therein a computer program, said computer program causing the computer to execute the method of claim 1.

9. The computer of claim 8, wherein the computer comprises a controller.

10. A machine-tool or production machine comprising a controller according to claim 9.